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NOTES ON THE EARLY STAGES OF ESTIGMENE PRIMA (LEPID. ARCTIIDAE).

BY ELMER T. LEARNED,

Fall River, Mass.

A female *Estigmene prima* was taken at Fall River June 14, 1920. This is south of its usual range which is given as northern New England and New York and southern Canada. Observations on the early stages of this species have been published by A. F. Winn (Can. Ent. XLIV, 1912, 221) but as the species is not common the following are offered in amplification.

The moth was taken flying across a meadow in the afternoon, and had been flying for some days, judging from the rubbed condition. Twenty-five eggs were laid that afternoon and evening, forty more the next day, after which the moth died.

The eggs were laid in mats very lightly attached to the box. They were nearly spherical with the bottom slightly flattened, about .75 mm. in diameter, pale lemon yellow, the surface finely shagreened. A day after laying the color had changed to yellowish orange, this deepening by the second day to yellowish red, when also a reddish line appeared extending part way around the egg at the equator; some of the eggs were slightly darker at the apex.

The eggs were very thin shelled. It is usual for eggs to show more or less indenting of the surface as they develop, but in the present instance this was extreme, as within three days after they were laid they were so shriveled as to appear no more than shapeless bits of chitin, and were thought to be infertile, but all eventually hatched.

The color gradually darkened until twenty four hours before hatching it was dark bluish, nearly black, the young larva being visible within. They hatched on the eighth day (June 22). Egg shells were eaten almost completely.

Stage I. Immediately after eating the larvae were pale lilaceous the last three segments whitish. Head dark colored. Next day they are pale brown, with an indistinct greenish tinge to the dorsum, the first abdominal segment reddish. There is a black cervical shield, and the usual verrucae of the same color; setae are black, rather long, the longest those on the 2nd, 3rd, 4th and last two segments. The larvae at this stage eat and rest in loose groups, and eat the parenchyma only, from the under surface of the leaf. First molt occurred four days after hatching (June 26).

Stage II. Brownish with a faint white dorsal line; verrucae black, each now with several setae, black as before. The larvae now eat holes through the leaf. Second molt on the third day (June 29).

Stage III. Head shiny black, clypeus brown. Body dark with a yellow dorsal line and broad yellow subdorsals. Warts black, shiny, setae black with a few white ones intermingled. The subdorsal wart (ii) of each segment is surrounded by yellow, except on the third and tenth segments, on which the

388014

subdorsals are absent, and warts ii and iii appear more conspicuous. Legs are black, prolegs dark. Spiracles not seen. Closely examined with a lens the body color appears to be dark purple mottled with white. The sharply contrasting yellow markings on the black ground give the larvae at this stage a very striking appearance. Third molt on the fourth day (July 3).

Stage IV. Larvae essentially as before, except that the yellow color is less pronounced. Fourth molt on the fifth day (July 8).

Stage V. Head shiny black, labrum and base of antennae whitish. Color dark gray, nearly black, setae mostly white, thus giving a generally gray appearance. Setae of lower row (v) of warts are all white, those of the warts above have some black ones intermingled. The yellow dorsal line is in most larvae continuous, well defined, but in some only faintly indicated. The yellow subdorsals and the yellow about wart ii are less conspicuous than before, varying much in different larvae, and in many are obsolete. In some larvae there is a little yellow at the base of wart v, and in still others the whole lateral area is irregularly and finely mottled with yellow. Legs are shiny black, prolegs like body, with pale tips. Fifth molt on the fourth day (July 12).

Stage VI. Head as before. Body black with more or less distinct dull yellow dorsal line. The subdorsal markings have disappeared, though close examination in some individuals shows traces of them. Setae are all black and the larvae have a quite bushy appearance. Legs as before, prolegs black with pale plantae. Spiracles are still inconspicuous except the last which is oval, pale brown. The general appearance of the larvae in this stage is notably different from the preceding, being jet black instead of gray, and lacking the contrasting yellow coloring.

As the larvae became older (three or four days after molting) indications of the markings of the previous stage appeared as a diffuse yellowish stippling; the whole lateral area is more or less finely yellow speckled, this becoming whitish on the venter, and a similar faint whitish stippling is present on the dorsum. The first larvae pupated ten days after last molt (July 22), one month after hatching.

The food plant was wild cherry, (Prunus sp.), and was selected by the larvae from several kinds of leaves offered.

The caterpillars stopped eating two or three days before pupation, and after running about for a time spun cocoons on the bottom of the breeding jar, under leaves. Cocoon and pupa were as described by Winn, except that the cremaster was armed with from ten to twelve small hooks. The moths emerged in April.

A PRELIMINARY REVISION OF THE CAMPOPLEGINAE IN THE CANADIAN NATIONAL COLLECTION, OTTAWA.

BY HENRY L. VIERECK,

(Continued from page 303, Vol. LVII., 1925.)

Zachrestoides new genus.

Has characters in common with *Anilasta* Thomson from which it may be known by the lower tooth of the manibles being shorter than the upper, by the decidedly convex clypeus and by its habitus. This may be the same as *Zachresta*

Foerster although it is not necessarily the same as that genus as understood by Davis and Ashmead.

Genotype—Z. *euphydryadis* n. sp.

Zachrestoides euphydryadis n. sp.

Because of its lack of an areolet this species goes to *Eriborus* Foerster which is presumably a synonym of *Diadegma* Foerster, Schmiedeknecht. In Thomson's scheme this species goes to *Anilasta* Thomson which is also evidently a synonym of *Diadegma* Foerster, Schmiedeknecht. Z. *intermedia* Viereck and the present species are certainly congeneric.

Female. Length 9 mm.; black, scape and pedicel with an apical stramineous margin, mandibles blackish and brownish throughout, maxillary palpi stramineous, labial palpi blackish, fore coxae and proximal trochanters mostly black, fore distal trochanters pale stramineous, fore femora yellowish above, dark stramineous below, fore tibiae yellowish stramineous, fore tarsi stramineous, tegulae pale stramineous, mid and hind coxae and trochanters blackish, mid and hind femora and hind tibiae reddish brown, mid tibiae yellowish stramineous, mid tarsi more or less pale stramineous, hind tarsi brownish stramineous and infuscated, abdomen reddish excepting the plica which is yellowish and the first tergite which is black save for the post petiole which is mostly reddish, sheaths blackish, barely longer than the apical truncature of the abdomen; areola and petiolarea confluent, wrinkled and transversely costate; junction of the petiole and postpetiole with a median fossa between two impressions on each side.

Holotype—♀, St. Adele, Que., 1896, ex. *Euphydryas phaeton*, No. 1579, in the Canadian National Collection, Ottawa.

Zachrestoides intermedia n. sp.

Recurrent vein received before or in the middle of the areolet and the spiracles of the first tergite as near to the apex as to each other coinciding in the latter character with the genus *Benjaminia* Viereck.

Male. Length, 8 mm.; black, including the antennae, mandibles and palpi, the mandibles brownish at apex, all coxae and trochanters almost entirely black or blackish, femora and hind tibiae reddish, fore and mid tibiae and all tarsi more or less dark stramineous, all the apical tarsal joints more or less infuscated, tegulae and plica blackish, the sternites with a yellowish margin; areola complete, finely sculptured, polished, with a few carinae, the petiolarea coarsely wrinkled.

Holotype—♂, Bernard Harbor, N. W. T., 1916 (Can. Arc. Exp.); No. 1578 in the Canadian National Collection, Ottawa.

Cymodusa melanocera n. sp.

Related to *C. gracilicornis* Viereck.

Male. Length 5 mm.; black, including the antennae, mandibles mostly yellowish, palpi whitish, tegulae yellowish with a pale stramineous margin, fore and mid coxae and trochanters and distal trochanters of hind legs yellowish, rest of fore and mid legs mostly stramineous, hind coxae and their proximal trochanters mostly black, hind femora reddish with blackish stains, hind tibiae brownish stramineous, infuscated near base and at apex, hind tarsi infuscated, the base of their metatarsi pale, abdomen black or blackish except as follows—

broad apical margin of second, third and fourth tergite stramineous, the succeeding tergites with a narrow stramineous edge, plica yellowish; areola nearly equilateral, truncate at base, the basal area nearly parallel sided, petiolarea transversely, finely wrinkled; postpetiole nearly parallel sided, at its widest part it is half as wide as long.

Holotype—♂, Saanich Dist., B. C., June 7, 1919 (W. Downes); No. 1615 in the Canadian National Collection, Ottawa.

Cymodusa plesius n. sp.

Related to *C. distincta* Cresson.

Female. Length 5 mm.; flagellar joints 2, 3, 4 and 5 whitish on the inner side, the first joint also whitish on the inner side except at base; hind coxae nearly entirely black, like the proximal trochanters of hind legs; areola and basal-area confluent, tergites 5, 6 and 7 mostly black; otherwise very as in *C. distincta* Cress.

Holotype—♀, Oliver, B.C., April 20, 1923, (C. B. Garrett); No. 1297 in the Canadian National Collection, Ottawa.

(*Limneria*) *Cymodusa provancheri* new name=*Cymodusa distincta* Provancher, not Cresson.

Holotype—♀, Kentville, N. S., June 19, 1914 (C. A. G.); No. 1966 in the Canadian National Collection, Ottawa.

Cymodusa gracilicornis n. sp.

Related to *C. plesius* Viereck.

Female. Length 4.5 mm.; flagel entirely blackish brown, scape dark reddish beneath, hind coxae and hind proximal trochanters nearly entirely black or blackish, areolet sessile, nearly petiolate, areola and basal area nearly confluent, the sides of the latter nearly parallel; tergites mostly black or blackish, plica dark stramineous, apical border of second and third tergites dark reddish; exserted portion of sheaths of ovipositor a little longer than the first tergite.

Holotype—♀, Georgetown, Ont., Aug. 30, 1893, (W. Metcalf); No. 1298 in the Canadian National Collection, Ottawa.

Pyracmon albicinctum n. sp.

Related to *P. vancouverensis* Harrington.

Male. Length, 9 mm.; black, antennae black throughout, mandibles mostly yellow, palpi stramineous, tegulae blackish, with a stramineous border, coxae black, proximal and mid and hind distal trochanters mostly black, fore distal trochanters mostly stramineous, partly black, rest of fore legs stramineous, mid and hind femora reddish, their tibiae rather brownish red, their tarsi mostly brownish, most of the joints pale at base, abdomen black save for yellowish margins to the sternites; areola nearly equilaterally triangular, narrowly truncate at base, confluent with the petiolarea, the latter concave and transversely costate, the former nearly planate and nearly smooth.

Female. Length 8 mm.; agrees with the description of the male except in having the fore distal trochanters entirely stramineous; sheaths of the ovipositor a little longer than the thorax.

Holotype—♂, Oliver, B. C., May 1, 1923, (C. B. Garrett); No. 1591 in the Canadian National Collection.

Allotype—♀, with the same data as the holotype except the time of capture April 28, 1923.

Paratypes—♀ with the same data as the allotype, ♀ ♀ and ♂ ♂, Keremeos, May 7, 8, 192, Princeton, May 6, 1923, Chilcotin, June 7, 1920, (E. R. Buckell); Hedley, May 15, 1920, (W. B. Anderson), B. C.

Pyracmon patulum n. sp.

Related to *P. albicinctum* Viereck.

Female. Length 6 mm.; black, antennae blackish throughout, excepting the apex of the scape which is stramineous, mandibles mostly yellow, palpi stramineous, tegulae yellowish with a pale stramineous margin, coxae blackish to black the fore pair pale at apex, basal half of fore and mid proximal trochanters mostly brownish, their apical half mostly yellowish, distal trochanters yellowish, femora reddish, fore and mid tibiae stramineous, fore tarsi brownish, mid tarsi brownish excepting the basal half of their basitarsi which is pale, hind tibiae brownish yellowish at base, their tarsi mostly brownish, abdomen black, apical third of second, all but base of third all of fourth and lower part of sides of fifth and sixth tergites more or less reddish or brownish-red; propodeum poorly areolated, the lateral longitudinal carinae not very strong, the median longitudinal carinae mostly confused with the sculpture of the propodeum, costulae wanting, areola defined only at base where it is truncate, opening posteriorly in the ill defined petiolarea.

Holotype—♀, Winnipeg, Man.; July 1895 (J. Fletcher); No. 1589 in the Canadian National Collection, Ottawa.

Pyracmon macdunnoughi n. sp.

Related to *P. vancouverensis* Harrington.

Female. Length 7 mm.; sheaths of the ovipositor two-thirds the length of the abdomen; black, antennae black, basal fourth brownish beneath, scape with a pale stramineous apical margin, pedicel blackish, brownish beneath, mandibles blackish, partly yellowish brown, palpi infuscated, tegulae blackish brown, coxae and fore and mid proximal trochanters black or blackish, fore and mid distal trochanters stramineous, femora, fore and mid tibiae and hind trochanters reddish, the hind femora and trochanters brightest, fore and mid tarsi brownish, hind tibiae and tarsi blackish; areola narrowly truncate at base, nearly equilateral, nearly hexagonal, confluent with the petiolarea which is weakly transversely costate.

Holotype—♀, Nordegg, Alta., June 25, 1921, wood-pile, (J. McDunnough); No. 1587 in the Canadian National Collection, Ottawa.

Paratypes—♀ ♀, Waterton, Alta., July 17, 1923, (H. L. Seamans); Sudbury, Ont., 1890; Radison, Sask., July 29, 1907, (H. Skinner). The latter paratype in the collection of the Academy of Natural Sciences, Philadelphia.

Named in honor of Dr. J. McDunnough.

Pyracmon ruficinctum n. sp.

Related to *P. vancouverensis* Harrington.

Male. Length 12 mm.; black, antennae blackish throughout, mandibles mostly yellow, palpi stramineous, tegulae yellow with a nearly colorless margin, coxae black, fore and mid trochanters and hind distal trochanters, yellowish, hind

proximal trochanters blackish with a stramineous margin, fore and mid femora stramineous tipped with yellow, hind femora reddish with yellow tips, extensor surface of fore and mid tibiae, yellowish, their flexor surface stramineous, extensor surface of most of fore and mid tarsi yellowish except for brownish tips, the flexor surface stramineous fore and mid apical tarsal joints brownish throughout, hind femora reddish, their tibiae reddish with the apical fourth mostly brownish, the extensor surface with a whitish stripe from the base to the brownish apical portion, hind basitarsi mostly yellowish, blackish at apex, the end joint blackish, the intermediate joints blackish, yellowish at base; apical half of postpetiole, second tergite, third tergite at base and a mark on each side near the apex reddish, plica yellowish; propodeum concave, transversely costate, areola rounded at base, confluent with the petiolarea.

Holotype—♂, Lethbridge, Alta., Aug. 3, 1923, (H. L. Seamans); No. 1590 in the Canadian National Collection, Ottawa.

Pyracmon fossatum n. sp.

Related to *P. patulum* Viereck.

Male. Lenght, 7 mm.; black, scape yellow in front, blackish behind like the rest of the antennae, mandible mostly yellow, palpi stramineous, tegulae yellowish, with a narrow pale stramineous margin, fore and mid coxae and trochanters and hind distal trochanters yellow, fore and mid femora, the flexor surface of their tibiae and tarsi stramineous, their extensor surface mostly yellowish, end joint of fore and mid tarsi brownish, hind coxae black, their proximal trochanters blackish and yellowish, hind femora and tibiae reddish, the latter yellowish at base and slightly infuscated near the apex, hind basi-tarsi mostly yellowish, brownish at apex, rest of tarsi mostly or wholly brownish, apical third of post-petiole, apical third of second and third tergite, most ot fourth tergite and lower part of sides of the succeeding tergite, reddish to reddish brown, the fifth and following tergites dark stramineous at apex; areola complete, pentagonal, acute at base, nearly equilateral, weakly sculptured, the petiolarea transversely wrinkled, propodeal spiracles round.

Holotype—♂, Sudbury, Ont., June 18, 1892; No. 1588 in the Canadian National Collection, Ottawa.

Paratype—♂, with the same data as the holotype but collected June 16, 1892, differs from the holotype in having the areola hexagonal, truncate at base, in the propodeal spiracles being oval and in the stramineous rather than yellowish underside of the scape. This paratype may prove to be another species.

Pyracmon Holmgren.

(Limnerium) Pyracmon sericeum Provancher.
(Limnerium) Pyrapmon barbatum Provancher.
(Limnerium) Pyracmon valens Cresson.

Zaplatystoma new genus.

Related to *Olesicampe* Foerster and *Ameloctonus* Foerster from both of which it may be known by the *Therion-like* clypeus that extends on each side as far as the base of the mandibles.

Genotype—Z. *typicum* n. sp.

Z. typicum n. sp.

Female. Length 8 mm.; black, conspicuously silvery with silvery hairs, scape and pedicel whitish yellow in front, blackish behind, basal third of flagel mostly blackish, rest of flagel brownish stramineous, clypeus yellowish with the anterior margin pale stramineous, mandibles mostly yellow, palpi stramineous, tubercles and tegulae yellowish and stramineous, fore and mid coxae yellowish, brownish stramineous at base, hind coxae black, fore and mid and hind distal trochanters yellowish, hind proximal trochanters blackish, with the apical margin broadly yellowish, fore and mid tibiae and femora dark stramineous, fore tarsi concolorous with their tibiae, mid tarsi brownish to blackish, with most of the joints pale at base, hind femora blackish, partly reddish on the inner aspect, hind tibiae and tarsi mostly blackish, the former with a broad whitish annulus at base, the tarsal joints pale at extreme base, spurs pale stramineous, abdomen reddish, first segment, basal two-thirds and apical interrupted margin of second as well as the base of the third tergite black, plica yellowish, sheaths blackish, not longer than the apical truncature of the abdomen; areola acute at base, its longest sides converging posteriorly, nearly parallel, areola apparently more than twice as long as its greatest width, confluent with the petiolarea, the latter nearly bare and transversely wrinkled.

Male. Differs from the female essentially as follows—Flagel blackish throughout, fore and mid coxae yellowish throughout, proximal hind trochanters blackish only on the flexor surface, hind femora virtually blackish throughout, apical tergite, fourth sternite, basal two-thirds of third tergite and all of second tergite, back; areola not so slender apparently not much longer than its greatest width.

Holotype—Kingsmere, Que., July 23, 1919, (R. N. Crystal); No. 1596 in the Canadian National Collection, Ottawa.

Allotype—♂, Orillia, Ont., July 30, 1924, (H. L. Viereck).

Zaplatystoma latum n. sp.

Related to Z. *typicum* Viereck.

Male. Length 7 mm.; agrees with the original description of Z. *typicum* Vier. except as follows—scape and pedicel yellowish in front, tubercles black, fore and mid coxae blackish at base, hind proximal trochanters blackish with a yellowish apical margin, hind femora blackish, reddish on the inner aspect, hind tibiae brownish, yellowish at base and with the apical third mostly blackish, abdomen black, the second tergite with a median, apical, pale stramineous margin, the third tergite reddish save for a blackish basal margin, fourth tergite reddish throughout, plica yellowish, the following, exposed sternites, rather reddish; areola with trenchant sides except at apex, narrowly truncate at base, where it is nearly pointed.

Holotype—♂, Winnipeg, Man., July, 1895, (J. Fletcher); No. 1593 in the Canadian National Collection, Ottawa.

Zaplatystoma cinereum n. sp.

Related to Z. *latum* Viereck.

Female. Length 7 mm.; black, scape and pelicel mostly almost orange color, blackish behind, like the flagel at base, rest of flagel pale brownish, mand-

ibles mostly yellow, palpi yellowish stramineous, tegulae yellowish with a narrow pale stramineous margin, tubercles stramineous, fore and mid legs almost entirely yellowish stramineous, hind coxae black, reddish at apex, rest of hind legs mostly stramineous, their femora and tibiae rather reddish, abdomen reddish, petiole black except apically on the sides where it is reddish like the postpetiole laterally and apically, second tergite blackish at base; areola and petiolarea confluent, the former narrowly truncate at base, more than twice as long as its greatest width, petiolarea transversely costate.

Holotype—♀, Buffalo, New York, June 9, 1888, (E. P. Van Duzee); No. 1595 in the Canadian National Collection, Ottawa.

Zaplatystoma ocellatum n. sp.

Related to Z. *annulatum* Provancher.

Male. Length 7 mm.; black, scape and pedicel yellowish, blackish behind, flagel blackish and brownish, clypeus partly stramineous laterally along the anterior margin, mandibles mostly yellow, maxillary palpi whitish, labial palpi yellowish stramineous, tegulae yellowish, tubercles pale stramineous, fore and mid coxae and trochanters mostly yellowish, rest of fore and mid legs stramineous save the apical joint of the tarsi which is brownish, hind coxae black, their trochanters yellowish, their femora swollen and reddish, their tibiae brownish stramineous, yellowish at base, the flexor surface paler stramineous, hind basitarsi mostly yellowish, brownish at apex, the succeeding hind tarsal joints mostly brownish, the second and third yellowish at base; areola finely sculptured, broadly truncate at base, confluent with the petiolarea which latter is transversely costate.

Holotype—♂, Ottawa, Ont., (W. H. Harrington); No. 1600 in the Canadian National Collection, Ottawa.

According to a note by Harrington the eyes are bright bronze, presumably when fresh because now the eyes are greyish iridescent.

(To Be Continued)

STUDIES IN THE MELYRIDAE, No. V. (COLEOPTERA).

BY FRANK E. BLAISDELL, SR.,

San Francisco, California.

Col. Casey in the introductory remarks of his revision of the melyrid genus *Trichochrous* Motsch. states: "This genus is in all probability one of the largest of the North American Coleoptera, its species occurring in unnumbered scores in the extreme western regions of the continent, and especially in California, where it constitutes one of the chief arboreal elements of the order."

This prophecy is coming true, as material continues to come in from all the regions visited by collectors. It is also true that Motschulsky's genera, *Byturosoma* and *Emmenotarsus* should not have been suppressed. Col. Casey at the beginning of his synopsis of the genus *Trichochrous* as extended by him, defines four distinct groups of species which to my mind have generic value, two of which represent Motschulsky's genera. These will have to be restored as the genus *Trichochrous* as it now stands is undoubtedly a composite and, besides it is getting too bulky. Intensive study emphasizes this need and the facts at hand demand a regrouping of the species, which will be done in the near future.

The following new species have been recognized in material recently submitted to me for study and identification.

Trichochrous kernensis n. sp.

Form oblong-oval and moderately convex. Color black with a tinge of aeneous; antennae rufo-piceous and the mouth-parts piceous; legs rufous, the femora may be more or less rufo-piceous.

Pubescence short, recumbent, not dense and flavo-cinereous in color, hair-like and slightly coarser on the elytra. Lateral pronotal fimbriae short, regular, backwardly curved and pale in color; those of the elytral margins a little longer and a little less closely spaced, diminishing sightly in length from base to apex. Hairs of the under body a little longer, recumbent and very slender.

Head moderate in size, about as long as wide, muzzle short and rather small; front slightly and evenly convex, punctures somewhat coarse, irregularly spaced and rather sparse in the central area. Eyes large and moderately prominent. Antennae moderate in stoutness, extending a little beyond the pronotal base; joints five to eleven a little wider and subequal in width.

Pronotum about a third wider than long and quite equal to the elytral base; apex truncate in feeble circular arc between the slightly anteriorly prominent apical angles, which are evenly and narrowly rounded, slightly widened and a little prominent laterally; sides parallel in anterior two-thirds, very slightly prominent at basal third, thence convergent and sinuate to the small rectangular basal angles; base broadly arcuate; disk quite evenly convex, rather coarsely punctate, punctures in the central area separated by a distance equal to one to three times their diameter, denser laterally where they become slightly asperate.

Elytra oblong, sides parallel, arcuate in apical third and continuously so with the broadly rounded apex; disk very slightly depressed throughout the central area, punctures less strong than on the pronotum, humeri not tumid and rather moderately rounded. Scutellum slightly transverse and evidently truncate at apex.

Body beneath finely punctured. Legs rather slender.

Male.—Scarcely narrower than the female. Fifth ventral abdominal segment truncate at apex. Inner spur of the protibiae slightly stouter and a little shorter than the external.

Female.—Fifth ventral rather strongly rounded at apex. Protibial spurs small and equal.

Measurements.—Length (Types) 2.3-2.4 mm.; width 1 mm.

Holotype, male and *allotype*, female, in the National Collection at Ottawa Canada. *Paratypes*, two specimens in my own collection and one in that of Mr. Ralph Hopping.

Type locality.—Havilah, Kern County, California. Collected on May 27, 1913, by Mr. Hopping.

Kernensis belongs to Casey's first section of the genus and therefore a true *Trichochrous*. In general appearance it resembles *antennatus* Motsch., but has entirely different prothorax. The apical angles are narrowly rounded and prominent anteriorly, the sides are subangulate at middle and basal thirds. The species should follow Casey's *compactus* in our lists on account of the form of

the apical pronotal angles; the basal angles are very small and distinct. The species is much less broad than *compactus* and *brevis* Casey.

Trichochrous reticulicollis n. sp.

Form elongate-oval, about two and a half to three times as long as wide, moderately convex. Color deep black, with a slight aeneous tinge; tibiae and tarsi more or less rufous, the former piceous toward base; antennae at base and mouth-parts piceous. Luster shining.

Pubescence sparse, somewhat recumbent and dull flavo-cinereous in color, intermixed on the pronotum with darker hairs and longer, stouter brownish-black erect setae. The erect hairs of the elytra are less stout. Lateral pronotal fimbriae rather long, blackish and not forming a close-set regular fringe; marginal elytral fimbriae longest at base, rather widely spaced and gradually shortening toward apex. Hairs of the under surface of the body rather sparse and more or less brownish-gray in color.

Head relatively small, as wide as the pronotal apex, slightly transverse, muzzle not stout; surface almost plane, feebly and longitudinally impressed apically each side of middle third, surface smooth, strigose against the eyes anteriorly; punctures rather small and sparse, occiput and tempora asperato-reticulate. Eyes not very prominent, moderately convex and continuing the line of the tempora. Antennae not very stout, extending to about middle of basal third of the pronotum.

Pronotum transverse, about twice as wide as long, less than moderately convex; apex truncate in feeble circular arc; base broadly rounded, scarcely sinuate in lateral fifth; sides subparallel, slightly convergent anteriorly, rather evenly, broadly and feebly arcuate, not serrulate; angles distinctly and rather broadly rounded, the apical less so; disk punctate, punctures somewhat coarse, becoming stronger laterally where the surface is also reticulate, the central area being smooth and shining.

Elytra oblong-oval, about twice as long as wide; base broadly and feebly emarginate, humeri somewhat tumid and moderately rounded; sides parallel, feebly arcuate, becoming broadly rounded, to the apex in apical third, sutural angles obtusely rounded; disk feebly convex on the dorsum, rather suddenly arcuately declivous laterally in basal half, with the margin somewhat explanate behind the humeri, in apical half very gradually and arcuately declivous; punctures rather coarse and slightly impressed, surface feebly micro-reticulate, less so toward apex; punctures finer and not impressed on the apical declivity. Scutellum transverse.

Abdomen finely and rather sparsely punctate, punctures slightly denser on the fifth segment near apex. Legs moderate in length and stoutness.

Male.—Narrower and more parallel. Antennae a little stouter. Eyes a little more convex and prominent. Fifth ventral abdominal segment arcuato-truncate, more or less feebly sinuate in middle third. Inner spurs of the protibiae flattened, oblong, moderately stout, truncate and sometimes very feebly sinuate at apex, unguiculate on the outer side at apex, unguiculus slightly arcuate against the spur at apex.

Female.—Usually broader and less parallel. Fifth ventral rounded at

apex. Inner spur of the protibiae of usual form, rather small and slightly hooked at apex.

Measurements.—Length (Types) 3.5-3.6 mm.; width 1.2-1.4 mm.

Holotype, male and, *allotype*, female, in the National Collection at Ottawa, Canada.

Paratypes in the National Collection, in that of Mr. Ralph Hopping and that of the author. Eighteen specimens studied.

Type locality.—El Mirador, Tulare County, California. Collected by Mr. Hopping.

Reticulicollis was at first considered identical with *aenescens* Lec. On close examination it was discovered that the inner spurs of the protibiae of the male were quite different in the two species. In *aenescens* that spur is large, elongate and acute, slightly inwardly curved. Besides, the pronotal disk is smooth laterally and not reticulate. *Reticulicollis* is to follow *aenescens* Lec. and according to Motschulsky it belongs to the genus *Emmenotarsus*.

Trichochrous vicinus n. sp.

Form oblong-oval, moderately elongate, about two and a half times as long as wide and moderately convex. Color black; tibiae and tarsi rufo-piceous, basal joints of the antennae sometimes of similar color. Luster feebly aeneous and shining.

Pubescence sparse, rather coarse, consisting of more or less brownish semi-erect and long, erect, bristling blackish hairs. Prothoracic marginal hairs long, black, bristling and not forming a regular fringe; those of the elytral margins pale in color, long and widely spaced.

Head less than moderate in size, as wide as long, muzzle short, greatest width across the eyes slightly exceeding that of the pronotal apex; Front plane, scarcely impressed, very sparsely punctate, punctures small, a little larger and denser on the vertex, slightly rugulose laterally opposite the eyes and supraantennal convexities. Eyes large and quite strongly faceted, with very short inter-corneal setae. Antennae short, extending to about middle of the pronotum, rather slender and scarcely incrassate apically.

Pronotum as wide as the elytra, about a third wider than long; apex truncate in moderate circular arc; sides rather strongly arcuate, somewhat subangulate at basal third, anteriorly less arcuate and moderately convergent; base broadly arcuate; angles quite broadly rounded, the basal not in the least angulate; disk moderately and quite evenly convex, sparsely and rather coarsely punctate, punctures separated by a distance equal to two to four times their diameter, surface reticulate in lateral fourth, somewhat impunctate in the median line toward base.

Elytra scarcely twice as long as wide, moderately convex, humeri rounded and feebly tumid; sides parallel, apex broadly rounded; disk rather coarsely punctate, surface somewhat undulate.

Abdomen apparently punctato-reticulate. Legs rather slender, the metafemora comparatively so.

Male.—Scarcely narrower than the female. Fifth ventral abdominal segment truncato-sinuate, surface flattened.

Female.—Fifth ventral segment rounded at apex.

Measurements.—Length (Types) 2.9-3 mm.; width 1.1-1.3 mm.

Holotype, female in the National Collection at Ottawa, Canada.

Allotype, male in the collection of Ralph Hopping.

Paratype a male, in the author's collection. Three specimens studied.

Type locality.—Havilah, Kern County, California. Collected by Mr. Ralph Hopping on May 27, 1913.

Vicinus differs from *squalidus* Lec. in its broadly rounded pronotal angles and reticulate sides of the pronotal disk. *Vicinus* might be confounded with *rusticus* Casey and *politus* Casey, but both of these species have the sides of the pronotal disk smooth and not reticulate. Both of the latter species are before me. *Vicinus* according to Casey's table should be associated with the latter species. It belongs to Motschulsky's genus, *Emmenotarsus.*

Dasytes subaeneus n. sp.

Form oblong-ovate, moderately elongate, about two and three-fourth times as long as wide, moderately convex, sides noticeably converging anteriorly. Color black, slightly aeneous; antennae, mouth-parts and femora dark piceous; tibiae, trochanters, tips of coxae and femora rufo-testaceous: tarsi rufo-piceous.

Pubescence dull grayish in color, abundant, recumbent; hairs rather slender, longer and most plentiful on the pronotum; head and pronotum with sparsely placed, more or less erect black setae, at the sides and apical declivity of the latter the pale hairs are in part semi-erect. Fimbriae of the lateral pronotal margins pale and quite regular; those of the elytral margins a little longer and less regular. On the under surface of the body the hairs are more slender, recumbent and moderately abundant.

Head relatively small, about as long as wide, muzzle rather short; surface not impressed, scarcely slightly convex, punctures moderately small, not closely placed and quite equally distributed. Eyes moderately prominent, rather strongly convex, facets somewhat coarse. Antennae extending to the pronotal base laterally, quite slender and the joints nearly similar throughout, the second less robust than the fourth, the third subtriangular and slightly compressed, relatively small, eleventh pointed obovate and twice as long as wide.

Pronotum noticeably transverse, about a half wider than long, moderately and evenly convex from side to side; apex feeble arcuato-truncate in moderate circular arc; base broadly and moderately strongly arcuate; sides quite strongly and evenly arcuate, continuously so with the base and apex, angles quite broadly rounded; disk moderately strongly punctate, punctures small, distinct and separated by a distance equal to two or three times their own diameter, intervals flat in the central area, submarginal line not sharply defined, somewhat confused with the rugoso-punctate surface which is lateral to it.

Elytra at base scarcely wider than the pronotum; sides diverging a little posteriorly, scarcely arcuate, apex broadly rounded; humeri slightly tumid and obtusely rounded; disk moderately convex, arcuately so at the sides, less strongly so apically; surface very feebly rugose, punctures rather small and spaced nearly as on the pronotum.

Body beneath finely and not densely punctate. Legs of moderate length and rather slender.

Male.—Less robust and somewhat more parallel. Fifth ventral abdominal

segment quite broadly truncate at apex.

Female.—More robust, usually larger. Fifth ventral segment broadly but not strongly arcuate at apex.

Measurements.—Length (Types) 2.8-2.9 mm.; width 1-1.3 mm.

Holotype, male and, *allotype,* female, both to be placed in the National Collection at Ottawa, Canada.

Paratypes in the collection of the author and that of Mr. Ralph Hopping of Vernon, B. C.

Type locality.—El Mirador, Tulare County, California. Thirty-seven specimens studied. Collected by Mr. Hopping.

Subaeneus resembles *cruralis* Lec. in coloration, but differs in its more aeneous luster, coarser pubescence and sculpturing. It should follow *cruralis* in our lists.

OBSERVATIONS ON THE CHERMIDAE (HEMIPTERA; HOMOPTERA).[1]

PART III.

BY G. F. FERRIS,

Stanford University, California.

For the third of this series of papers I have selected for discussion five species. Of these, one, *Pachypsylla venusta* (Osten Sacken), is the type of its genus and consequently of the tribe Pachypsyllini. In connection with the description of the nymph of this species it is desirable to describe a peculiar nymph of which it is possible only to say that it belongs to the same tribe. Although the species to which it belongs must for the present remain nameless it is one of such interest that it is justifiable to consider it. Of the other species, two, *Psyllia buxi* (Linnaeus) and *Phyllopecta tripunctata* (Fitch) are the types of genera, while *Phyllopecta diospyri* (Ashmead) is of interest in connection with *P. tripunctata.*

Pachypsylla venusta (Osten Sacken).

Fig. 1.

MATERIAL EXAMINED. Adults and nymphs from *Celtis* sp., Reserve, Louisiana, received from Mr. T. H. Jones and nymphs of apparently the same species from *Celtis mississippiensis,* Dallas and Brownsville, Texas (G. F. Ferris) and from galls on herbarium specimens of *Celtis douglasii* near Salt Lake City, Utah.

NYMPHAL STAGES. My material contains specimens of the last three stages, which, if the number of stages is the same in this species as in others studied would be the third, fourth and fifth. This species forms a large, spherical gall on the twigs and petioles of its host.

Fifth stage (Fig. 1A). Length 4 mm. Of psylliine form, the head very small, the wing-pads disproportionately small and the abdomen much swollen. Derm membranous throughout except for two pairs of small areas on the dorsum of the head, a pair at the base of the antennae, the wing pads, small areas on the venter of the abdomen, the extremely heavily chitinized apex of the abdomen and the appendages. The body is quite thickly beset with slender setae, those at the margins of the abdomen being longer than the others, which give the insect a shaggy appearance.

1.—Continued from Canadian Entomologist 57: 50. (1925).

Antennae (Fig. 1D) moderately stout, nine-segmented, the third segment about twice as long as any of the others and slightly bent. Legs quite stout, *with a distinct trochanter*; claws lacking; pulvillus apparently lacking.

Abdomen with the apical third, both dorsally and ventrally, very heavily chitinized, the shape of this area as indicated in the figure, and terminating in a conspicuous spine-like point which is flanked by stout spurs (Fig. 1F). Apparently the anal opening is borne by this process. Dorsally this chitinized area seems to involve three segments, each of which bears medially a cluster of three to six stout spurs. The two anterior segments included in this area bear at their lateral margins clusters of very peculiar pores (Fig. 1B).

The anal pore ring, which is such a marked feature of other members of this family, is entirely lacking.

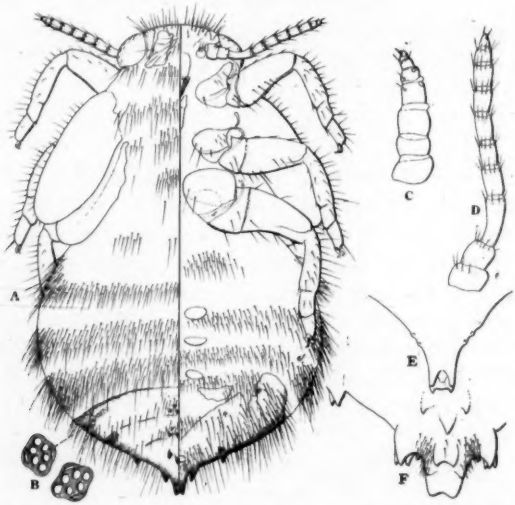

Fig. 1. *Pachypsylla venusta* (Osten Sacken). A.—Fifth stage of nymph; B.—pores; C.—antennae of third stage; D.—antennae of fifth stage; E.—apex of abdomen of third stage; F.—apex of abdomen of fifth stage.

Fourth stage. Length 2 mm. Differing from the fifth stage in having the abdomen terminate in a simple process without the lateral or dorsal spurs (Fig. 1E); in having the antennae (Fig. 1C) short, stout and six-segmented and in having the legs shorter and stouter; and in the absence of the tibio-tarsal articulation.

Third stage. Length 1 mm. Differing from the fourth in having the antennae still shorter and stouter, although composed of the same number of segments and in the absence of the trochanter.

Note: This genus is evidently a very peculiar group. Although it has been placed together with two other genera as a tribe of the Psylliinae it differs so markedly from the typical psylliine forms as to suggest the probability that a different position must eventually be assigned to it. The peculiar groups of pores on the abdomen, the type of the antennae, the presence of trochanters, and above all the absence of the circum-anal pore ring are marked characteristics.

As far as I am aware representatives of this genus have not been recorded from California. I have at hand undetermined nymphs taken from small galls on the leaves of *Celtis reticulata* at Thing's Valley, near Campo, San Diego County.

Nymph of an undetermined species and genus.

Fig. 2.

MATERIAL EXAMINED. Nymphs only, from leaves of *Celtis reticulata,* Ridge Spring, Marathon, Texas, July 15, 1921 (G. F. Ferris).

This species forms a little, flat, waxen cell on the under side of the leaves of its host.

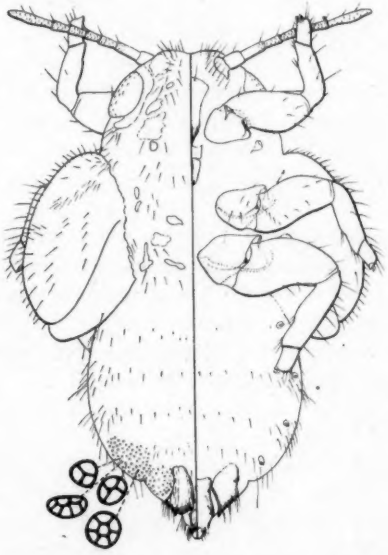

Fig. 2. *Undetermined species.* Fifth stage of nymph and abdominal pores.

NYMPHAL STAGES. Last stage only present in my material.

Fifth stage (Fig. 2). Length 3 mm. Derm membranous throughout except for small areas on the head and thorax, the wing pads, small apical areas on the abdomen and the appendages. Body sparingly beset with small setae as indicated in the figure.

Antennae eight-segmented, rather short, the last five segments and the apex of the third imbricated. Legs quite stout, without a trochanter; claws present; pulvillus apparently lacking.

Extreme apical portion of the abdomen chitinized; dorsally with a small apical plate which is flanked by a pair of lateral plates that bear a spur at the margin and are continuous with a pair of ventral plates which enclose a larger median plate. Cephalad of this chitinized region, on the dorsal side, is a zone of peculiar pores each of which consists of from three to seven large loculi (Fig. 2). There is no indication of any circum-anal pore ring and the anus is apparently borne on the apical process.

Note: Having at hand only the nymph it is impossible to identify this species, but it is one of such interest that I am discussing it without a name. The species differs markedly from *Pachypsylla* in several respects, notably the absence of a trochanter, the different shape of the abdominal pores and the different arrangement of the apical chitinization on the abdomen. However, the absence of the circum-anal pore ring, a certain general similarity and the host indicate a relationship to that genus. It is not at all impossible that it is the nymph of *Tetragonocephala flava* Crawford, which was described from Brownsville, Texas, based on a single male, without indication of host.

Genus Phyllopecta Zacher.

1913. *Phyllopecta*, Zacher, Ent. Mitteil. 2: 148.
1915. *Megatrioza*, Crawford, Philippine Jn. Sci. (D) 10: 254.
1919. *Megatrioza*, Crawford, Ibid. 15: 192.
1920. *Trioza*, Crawford, Ent. News 31: 70. (In part).

The genus *Phyllopecta* was named by Zacher in 1913 with *Psylla tripunctata* Fitch (=*Trioza tripunctata* Fitch) as type. *Megatrioza* was named by Crawford in 1915 with *M. armata* Crawford as type. Crawford (1920) states that the genus *Phyllopecta* can not stand as *tripunctata* is "clearly a member of *Trioza*."

However, Crawford himself (1919, p. 193) has referred the American species *Trioza diospyri* Ashmead to the genus *Megatrioza* and on the basis of his description of the latter genus it seems really to belong there. I have at hand material of both *diospyri* and *tripunctata* and it is evident that these two species are actually congeneric, all of the characters given by Crawford for *Megatrioza* being equally well developed in both, if not even more strongly in *tripunctata*. This being the case it appears that *Megatriosa* is a synonym of *Phyllopecta*.

The most distinctive features of the genus, as given by Crawford, are the presence of a spur, or spurs, at the base of the hind tibiae and of an anteriorly directed spur on the hind coxae in addition to the posteriorly directed spur. The majority of the species occur in the eastern tropics and the two species here referred to the genus are as far as known the only New World representatives.

I am attempting in this series of papers to figure and describe as many as possible of the nymphs of generic types. In this particular instance the figures of *diospyri* and *tripunctata* were prepared before I was aware that the latter was a generic type and consequently this species is not figured in detail. However, the labor of preparing these drawings is rather time consuming and consequently I am figuring only the former completely, the two species being so much alike in their general features that complete figures for both seem hardly necessary.

Phyllopecta diospyri (Ashmead).

Fig. 3 A, B, D, E, F, G, I, K, L, M.

MATERIAL EXAMINED. Adults and nymphs from *Diospyros*, Magnolia, Louisiana (T. H. Jones) and adults from Quantico, Virginia (C. D. Duncan).

ADULT. I shall here call attention merely to certain points of interest not mentioned by Crawford in his monograph.

The basal spurs on the posterior tibiae (Fig. 3M) are weakly developed, although distinctly present. The apex of the posterior tibiae (Fig. 3B) bears a strong apical spur on one side and three spurs on the other. The anterior spur of the posterior coxae (Fig. 3I) is well developed and easily visible.

NYMPHAL STAGES. My material contains nymphs of three stages, the fifth and probably the third and second.

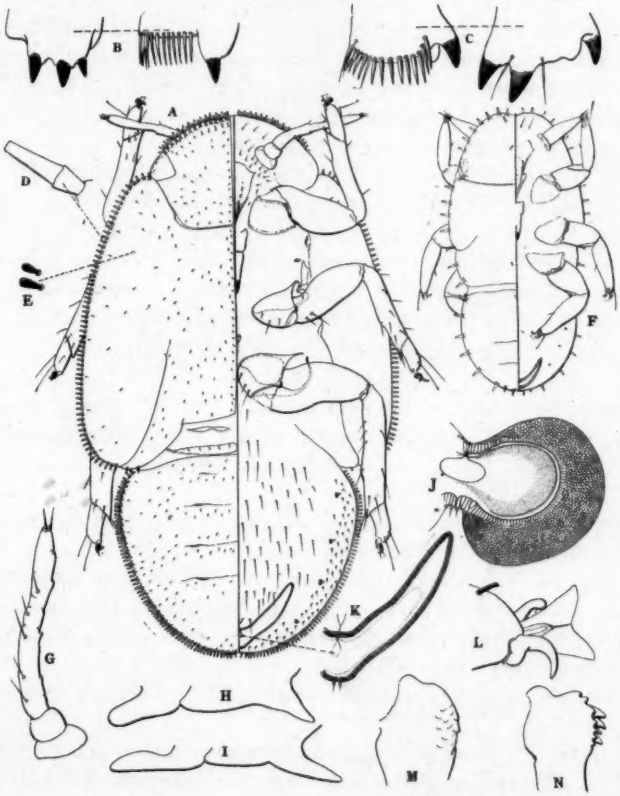

Fig. 3. *Phyllopecta diospyri* (Ashmead). A.—fifth stage of nymph; B.—apex of posterior tibia of adult; D.—sectaseta; E.—clavate setae of the dorsum; F.—second (?) stage of nymph; G.—antenna of fifth stage; I.—spurs of posterior coxa of the adult, anterior spur to the left; K.—portion of circum-anal pore ring; L.—apex of tarsus; M.—base of posterior tibia of adult.

Phyllopecta tripunctata (Fitch). C.—apex of posterior tibia of adult; H.—spurs of posterior coxa of adult, anterior spur to the left; J.—portion of circum-anal pore ring of fifth stage; N.—base of posterior tibia of adult.

Fifth stage (Fig. 3A). Length 2.1 mm. Of the typical triozine form, rather narrowly oval, the humeral angle of the wing pads produced forward to the posterior margin of the eye. Dorsum strongly chitinized throughout except for a small area at the base of the abdomen, the derm smooth, bearing quite numerous, very small, clavate setae (Fig. 3E). Margin of the body with a continuous series of quite closely set sectasetae (Fig. 3D) which on the head

and abdomen tend to be arranged in a double row and on the wing pads are in a single row.

Antennae (Fig. 3G) three-segmented, the first two segments very short, the third long, constricted at intervals but definitely not segmented. Legs with the femora not attaining the margin of the body; without trochanter; with the tibio-tarsal articulation well defined; claws present, the pulvillus (Fig. 3L) triangular, very slightly or not at all petiolate.

Ventral side with the derm membranous except for a faint marginal area on the abdomen which bears numerous small setae. Anal opening set rather close to the apex; circum-anal pore ring (Fig. 3K) large, broadly V-shaped, the outer ring consisting of a single row of small, slit-like pores, this enclosing a very faint inner ring of extreme minute circular pores.

Third (?) *stage.* Length 1 mm. Closely resembling the fifth but with the antennae shorter and with the tibio-tarsal articulation lacking.

Second (?) *stage.* (Fig. 3F). Length .5 mm. Antennae very short, two-segmented. Dorsum without clavate setae; marginal sectasetae very few, relatively large; wing pads small, but distinct; circum-anal pore ring of the same general shape as in the fifth stage; tibio-tarsal articulation lacking.

Phyllopecta tripunctata (Fitch).

Fig. 3 C, H, J, N.

MATERIAL EXAMINED. Adults and nymphs from blackberry, Egg Harbor, New Jersey, received through the kindness of Mr. Alvah Peterson, and nymphs and adults from wild blackberry, Baton Rouge, Louisiana, received through the kindness of Mr. T. H. Jones.

ADULT. I have nothing to add to the description given by Crawford except to call attention to the following points.

The base of the posterior tibia (Fig. 3N) is beset with several very conspicuous spurs; the posterior coxae (Fig. 3H) bear a very evident anterior spur that is only slightly shorter than in *diospyri;* the apex of the hind tibia bears three very strong spurs (Fig. 3C).

NYMPHAL STAGES. Nymphs of the fifth stage only are present in my material.

Fifth stage. In general form and appearance almost identical with that of *P. diospyri,* although somewhat more round; having the same arrangement of the marginal sectasetae, except that on the head they tend to become somewhat more numerous and form somewhat more than a double row; dorsal clavate setae lacking, the derm wrinkled and slightly papillate, mottled with areas of pigment. The most striking difference in the two species is to be found in the character of the circum-anal pore ring, which in *tripunctata* (Fig. 3J) is enlarged and composed of great numbers of minute pores in addition to the usual row of slit-like pores. Pulvillus aparently broader and shorter than in *diospyri.*

Note: This species is the type of the genus *Phyllopecta.*

Psyllia buxi (Linnaeus).

Figs 4, 5.

1921. *Asphagidella buxi* (Linn.), Enderlein, Zool. Anzeiger 52: 120.

MATERIAL EXAMINED. Adults and nymphs from *Buxus,* San Jose, California (C. D. Duncan).

ADULT. General color in life a pale green, becoming yellowish in dried specimens. Length (on slide, exclusive of wings) 4.2 mm. Antennae lacking on the available specimens. Head (Fig. 4C) with the vertex about half as long

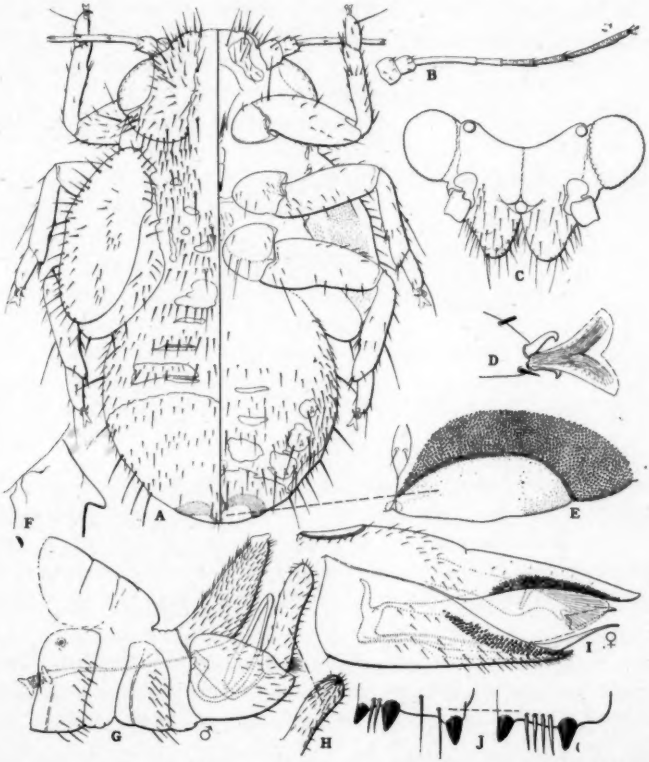

Fig. 4. *Psyllia buxi* (Linn.). A.—fifth stage of nymph; B.—antenna of fifth stage; C.—cephalic aspect of head of adult; D.—apex of tarsus of fifth stage; E.—portion of circum-anal pore ring of fifth stage; F.—base of posterior tibia of adult; G.—apex of abdomen of male adult; H.—inner face of clasper of male; I.—genital segment of female adult; J.—apex of posterior tibia of adult.

as broad, the genal cones nearly as long as the vertex, bluntly rounded, quite strongly divergent. Genital segment of the female (Fig. 4I) nearly as long as the remainder of the abdomen, both tergite and sternite beset with a longitudinal band of small, black, tubercle-like setae. Male with the anal valve (Fig. 4G) moderately long and slender, beset with numerous fine setae; claspers slender, terminating in a single small tooth on the inner side (Fig. 4H). Wings shown in Fig. 5. Posterior tibiae with three apical spurs on one side and two on the other (Fig. 4J) and with a strong basal spur (Fig. 4F).

NYMPHAL STAGES. Fifth stage only present in my material.

Fifth stage (Fig. 4A). Length 2.3 mm. Of the typical psylliine form. Derm of the dorsum membranous except for a pair of large ocular plates, the wing pads, the terminal half of the abdomen and a number of small plates arranged as shown in the figure. Dorsum and margins with numerous setae of various lengths, those along the abdomen especially large.

Antennae (Fig. 4B) seven-segmented, the last three segments imbricate. Legs large, the femora reaching beyond the margin of the body; without trochanter; tibio-tarsal articulation distinct; claws present; pulvillus (Fig. 4D) triangular, somewhat petiolate.

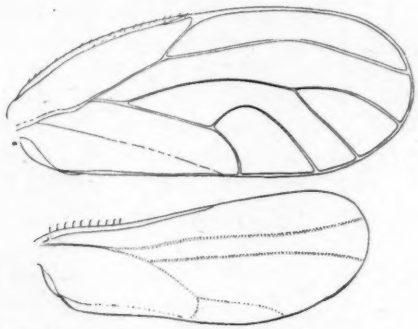

Fig. 5. *Psyllia buxi* (Linn.). Wings.

Venter with the derm membranous except for a small plate at the base of each antenna, the apex of the abdomen and a series of small abdominal plates arranged as shown in the figure. Anal opening at the apex of the abdomen; circum-anal pore ring encircling the apex of the abdomen, composed of great numbers of small, circular pores in addition to the usual row of slit-like pores (Fig. 4E).

Note: This species has several times been recorded from the United States but there appear to be no detailed discussions in the American literature. It has been utilized by Enderlein as the type of the genus *Asphagidella*.

I am not prepared to comment at length or with any pretence of authority upon the status of genera in this family but I can not refrain from expressing the suspicion that many of the genera named by Enderlein are based upon the most flimsy of grounds. The genus *Asphagidella* is said by him to differ from his genus *Asphagis* "durch das fehlen von r_1 im Hinterflugel." It is true that this vein is lacking but in view of the extreme reduction of the venation in the hind wings and the faint development of such veins as are present such differences are likely to be of but little significance.

Enderlein states that *Phyllia floccosa* (Patch) and *P. astigmata* (Crawford) likewise belong to *Asphagidella*.

ANNOTATED LIST OF THE CERAMBYCIDAE OF PENNSYLVANIA (COLEOPTERA).

BY H. B. KIRK AND J. N. KNULL,*

Pennsylvania Bureau of Plant Industry.

Various lists containing records of *Cerambycidae* from limited sections of Pennsylvania have been published from time to time, and it is the authors' idea to present here captures covering the entire state. Species likely to occur in the state have been included for convenience.

Records have been received from many entomologists, and in each case the collector has been credited with his capture. All captures without collector's name have been made by the authors.

Parandra Latr.

P. brunnea Fab.—Common through the state.

Derancistrus Serv.

D. taslei Buq.—S. W. Penna. (Dr. Hamilton); Clifton Heights July 19 (C. Voelher); Harrisburg August (A. B. Champlain); Rockville July 9 (Champlain and Knull); Hummelstown July 12.

Derobrachus Serv.

D. brunneus Forst.—A common species throughout the state.

Prionus Fab.

P. laticollis Drury—Generally distributed throughout the state.

P. pocularis Dalm.—Philadelphia July 12 (G. M. Greene).

P. imbricornis L.—S. W. Penna. July, Aug. (H. G. Klages) Heckton Mills June 22 (Fisher and Kirk).

Tragosoma Serv.

T. desparium L. var. *harrisi* Lec.—Jeannette June 16, Pittsburgh July 10 (H. G. Klages); Carlisle Junction July 4 (Fisher and Kirk); Hazleton (A. S. Nicolay); Hummelstown July 15, Endeavor July 30.

Distenia Serv.

D. undata Fab.—Generally distributed throughout Pennsylvania where hickory occurs. The species breeds in the roots of dead hickory as pointed out by F. C. Craighead[1] and the adults which are nocturnal can be collected at night, from June to October running over the bases of dead and dying hickories.

Smodicum Hald.

S. cucujiforme Say—S. W. Penna. (Dr. C. Hamilton); Wyoming, Aug. 14 (G. M. Greene); Harrisburg July, Hummelstown July 20.

Ascmum Esch.

A. moestum Hald.—A common species in May and June through the coniferous sections of the state.

Tetropium Kby.

T. cinnamopterum Kby.—Occurs through the coniferous sections of the state.

Criocephalus Muls.

C. agrestis Kby.—S. W. Penna. June and Aug. (H. G. Klages); Harrisburg July 10 (Fisher and Kirk); Endeavor July 29.

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*—Authors' Names Arranged Alphabetically.

1.—F. C. Craighead—Tech. Bull 27, Can. Dept. Agr.

C. obsoletus Rand.—Found from June to Aug. throughout the pine sections of the state.

Oeme Newn.

O. rigida Say.—Wyoming August 14 (G. M. Greene); Frankford Sept. 24 (A. Schmidt); Harrisburg June 30 (C. Anderson); Hummelstown Sept. 1, reared from dead cedar (*Juniperus virginiana*).

Dryobius Lec.

D. sexfasciatus Say.—S. W. Penna. June (H. G. Klages).

Tessaropa Hald.

T. tenuipes Hald.—Recorded from beech (*Fagus americana*) at Harrisburg by Fisher and Kirk; also reared from dead oak branches collected at Manada Gap; and hickory branches girdled by *Agrilus arcuatus* Say, collected at Hummelstown by Champlain and Knull; Chambersburg May —.

Zamodes Lec.

Z. obscurus Lec.—Penna. (Le Conte).

Tylonotus Hald.

T. bimaculatus Hald.—This species can be found throughout the state where ash occurs. The larvae work beneath the bark of the living trees, often killing them. The adults are not common in collections due to the fact that they are nocturnal and are in hiding during the daytime.

Stromatium Serv.

S. pubescens Hald.—S. W. Penna. June and July (H. G. Klages).

Chion Newn.

C. cinctus Drury—Found throughout the state, the adults being present April and May.

Eburia Serv.

E. quadrigeminata Say.—Generally distributed throughout the state but never common. The adults are present in June, July and August.

Romaleum White

R. atomarium Drury—This species although rather rare, is distributed throughout the state, the adults being present in June and July.

R. cortiphagus Craighead—Hummelstown, Rockville June, July; Harrisburg July 11; Manada Gap July 15.

R. rufulum Hald.—S. W. Penna. June and July (H. G. Klages); Williamsport (J. Geddes); Manada Gap July 5; Delaware Water Gap June 30.

Hypermallus Lac.

H. incertus Newn.—This species occurs throughout the state and is present through June, July and August.

H. villosus Fab.—A very common species throughout the state.

Elaphidion Serv.

E. irroratum L.—Pittsburgh (H. G. Klages).

E. mucronatum Say—A common species throughout the state.

Aneflomorpha Csy.

A. subpubescens Lec. Perry and Dauphin Counties.

Anoplium Hald.

A. cinerascens Lec.—S. W. Penna. (Dr. Hamilton); Frankford June 12, July 2, (A. Schmidt); Philadelphia June (J. H. B. Bland); Hummelstown July 3:

Rockville July 28, on chestnut blossom.

A. inerme Newn. A southern species which has been recorded from Penna.

Pseudibidion Csy.

P. unicolor Rand.—A common species throughout the state.

Heterachtes Newn.

H. ebenus Newn.—Pittsburgh July (H. G. Klages); Philadelphia June 22, Glenside May 5 (G. M. Greene); Hummelstown June 3, June 20.

H. quadrimaculatus Fab.—S. W. Penna. May and June (H. G. Klages); Overbrook August 18 (G. M. Greene); Harrisburg and Hummelstown July.

Curius Newn.

C. dentatus Newn.—Recorded from New Jersey and probably will occur in the state.

Gracilia Serv.

G. minuta Fab.—Jeannette and Pittsburgh May and June (H. G. Klages); Hazelton.

Obrium Curt.

O. maculatum Oliv.—Jeannette June (H. G. Klages); Philadelphia July 7 (G. M. Greene); Lemoyne (A. B. Champlain); Hummelstown June 6; New Germantown July 1.

O. rufulum Gahan—Jeannette June, July (H. G. Klages); Philadelphia July 4 (P. Laurent); Charter Oak July 17; Hummelstown August 5.

O. rubidum Lec.—Jeannette May and June (H. G. Klages); Allegheny (Horn Collection); Rockville (G. M. Greene); Inglenook June 2.

Rhagium Fab.

R. lineatum Oliv.—Common through the pine sections of the state.

Hapalosalia Csy.

H. aurata Horn—Jeannette July and August; Pittsburgh July (H. G. Klages); Charter Oak June 20, Cresco June 9.

H. vibex Newn.—Charleroi June and July (H. G. Klages); Inglenook May 25; June 19 (Champlain Kirk and Knull); Hummelstown June 24.

H. sphaericollis var. *ruficollis* Say—S. W. Penna. June and July (H. G. Klages); Carlisle Junction June 22 (Fisher and Kirk); Portage May 15.

Centrodera Lec.

C. decolorata Harris—St. Vincent (Dr. Hamilton); Carlisle Junction July 4 (Fisher and Kirk); Endeavor July 30.

C. picta Hald.—Wilmerding May and June (H. G. Klages); Mt. Airy 19 (P. Laurent); Linglestown June 1 (A. B. Champlain); Cresco June 9; Inglenook June 10.

C. sublineata Lec.—Pittsburgh (H. G. Klages); Rockville May 29 (G. W. Fleming); Wilmerding (V. Zahrobsky).

Stenocorus Fab.

S. cinnamopterus Rand.—S. W. Penna. June (Dr. Hamilton); Camphill May 31 (A. B. Champlain) Hummelstown May 16.

S. schaumi Lec.—S. W. Penna. (Dr. Hamilton).

S. trivittatus Say—S. W. Penna. (Dr. Hamilton); Inglenook May and June (Champlain, Kirk, and Knull).

S. cylindricollis Say—Jeannette June (H. G. Klages); Castle Rock June 22 (V. A. E. Daecke) Inglenook June 17 (Fisher and Kirk).

Evodinus Lec.

E. monticola Rand.—Jeannette July and August. (H. G. Klages); North Mountain June 8 (C. W. Johnson); Carlisle Junction July 4 (Fisher and Kirk); Charter Oak June 20; Foxburg June 19, Portage June 16.

Acmaeops Lec.

A. directa Newn.—One of our most common Cerambycids, found throughout the state in June and July.

A. proteus Kby.—State College June 29; Charter Oak June 22.

A. discoidea Hald.—Recorded from Penna. by Le Conte.

A. thoracicus Hald.—Jeannette and North East June and July (H. G. Klages).

A. bivittatus Say—S. W. Penna. (Dr. Hamilton); Cresco June 9.

Gaurotes Lec.

G. cyanipennis Say—Common thoughout the state in May and June on blossoms of various kinds.

G. abdominalis Bland.—Jeanette and Pittsburgh June (H. G. Klages); Linglestown July 4 (D. M. Castle); Cedar Run July 12.

Anthophilax Lec.

A. antennatus Hald.—Elk Co. (Dr. Hamilton); Beatty (P. F. Schmidt); Charter Oak May 8.

A. malachiticus Hald.—Jeannette June 24 (H. G. Klages); State College May 30 (F. C. Craighead); Charter Oak June 20; Wallis Run June 21; Harrisburg June 14.

A. viridis Lec.—S. W. Penna. June 20 (H. G. Klages).

Judolia Muls.

J. sexmaculata L.—Philadelphia June 18 (O. J. Elder).

J. cordifera Oliv.—Found throughout the state in June and July.

Brachyleptura Csy.

B. rubrica Say.—A common species in June, July and August on flowers.

B. vagans Oliv.—Common throughout the state in June and July.

B. circumdata Oliv.—Wilmerding and Jeannette June (H. G. Klages); Lancaster June 20 (D. M. Castle); Marysville June 22 (A. B. Champlain); Charter Oak June 8; Cresco June 10.

B. canadensis Fab.—S. W. Penna. June and July (H. G. Klages); Pocono Lake August 4 (G. M. Greene); Endeavor July 30; Cresson July 25; Montebello July 18.

B. sanguinea Lec.—A northern species which might occur in Penna.

Parallelina Csy.

P. chalybea Hald.—S. W. Penna. May (H. G. Klages).

P. exigua Newn.—Allegheny (Dr. Hamilton); Jeannette (H. G. Klages); Hummelstown June 14.

P. nana Newn.—S. W. Penna. (H. G. Klages); State College June 1; Wilkes-Barre May 26; Huntsville May 23; Montebello May 24.

P. nana var. *haematites* Newn.—S. W. Penna. (H. G. Klages).

P. subargentata Kby.—North East July (H. G. Klages).

Charisalia Csy.

C. americana Hald.—Philadelphia June 20 (J. K. Primm).

C. capitata Newn.—S. W. Penna June and July (H. G. Klages); Charlerot (Ehrmann); State College May 25 (F. C. Craighead); Montebello May 23.

Strangalepta Csy.

S. lineola Say—A common species throughout the state in May, June and July.

S. pubera Say—Found on flowers throughout the state in June and July.

S. vittata Oliv.—A very common species on flowers throughout the state from June to August. The authors reared a specimen June 12 from dead hemlock (*Tsuga canadensis*) wood collected at Inglenook.

Strangalia Serv.

S. subhamata Rand.—Jeanette and North East June and July (H. G. Klages); Pocono Lake July 12 (C. T. Greene); Inglenook June; Charter Oak July; Endeavor July 30; Hummelstown July.

S. subhamata var. *elegans* Lec.—This variety occurs where the true form is found.

S. cruentata Hald.—Charter Oak June 21.

S. plebeja Rand.—Uniontown (T. N. Brown); Mr. C. A. Frost states that he has a specimen of this species from Penna. collected by Dr. Dietz.

S. deleta Lec.—Recorded from New Jersey and probably will occur in Penna.

Xestoleptura Csy.

X. octonotata Say.—Common on flowers throughout the mountainous sections of the state in June, July and Aug.

Strophiona Csy.

S. nitens Forst.—A common species throughout the state in May, June and July where chestnut occurs.

Leptura L.

L. emarginata L.—S. W. Penna. (H. G. Klages); Lehigh Gap July 23 (G. M. Greene); Highspire August 31 (Fisher and Kirk); Rockville July 27 (A. B. Champlain); Hummelstown June 25.

L. nigrella Say.—St. Vincent (Dr. Hamilton); Jeannette July (H. G. Klages).

L. chrysocoma Kby.—North East July (H. G. Klages).

L. proxima Say.—A common species found on flowers in June, July and August. The authors reared it from dead witch hazel (*Hamamelis virginiana*) collected at Harrisburg.

L. biforis Newn.—Jeannette June and July, North East (H. G. Klages); Rockville June and July (Champlain, Kirk and Knull); Endeavor July 20; Hummelstown July 3; Charter Oak July 11; Hartstown July 25.

L. mutabilis Newn. Common on flowers in June and July.

L. aspera Lec.—A northern species which may occur in Penna.

L. pedalis Lec.—North East July (H. G. Klages).

Bellamira Lec.

B. scalaris Say—Although not common, this species seems to be generally distributed throughout the state.

Typocerus Lec.

T. zebra Oliv.—Jeannette June (H. G. Klages).

T. lunatus Swed.—Carlisle Junction June 28; Hummelstown June 10.
T. velutina Oliv.—A common species on flowers in June, July and August.
T. lugubus Say.—Common on flowers in June and July.
T. sinuata Newn.—Recorded from Penna. by Le Conte.

Ophistomis Thoms.

O. famelica Newn.—Common on flowers in June and July.
O. acuminata Oliv.—Common on flowers in May, June and July.
O. luteicornis Fab.—Common throughout the state in June and July.
O. bicolor Swed.—Although not common, generally distributed throughout the state and often found on wild rose blossoms.

Euryptera Serv.

E. lateralis Oliv.—Recorded from Penna. by C. W. Leng.

Encyclops Newn.

E. coerulea Say.—S. W. Penna. April and May (Dr. Hamilton); State College May; Harrisburg and Hummelstown May and June.

Desmocerus Serv.

D. palliatus Forst.—A common beetle in June, July and August where elder (*Sambucus*) occurs.

Necydalis L.

N. mellitus Say.—S. W. Penna. (Dr. Hamilton); Harrisburg June 18 (A. B. Champlain); Hummelstown June 23.

Molorchus Fab.

M. bimaculatus Say.—A common species throughout the state, appearing in the spring on the blossoms of dogwood and *Crataegus*.

Callimoxys Kr.

C. fuscipennis Lec.—Jeannette May (H. G. Klages); State College May 9; Cresco June 10.

Gonocallus Lec.

G. collaris Kby.—North East August, two specimens at light (H. G. Klages).

Physocnemum Hald.

P. brevilineum Say.—A fairly common species throughout the state where elm (*Ulmus*) occurs. The species breeds in the bark of the living trees often causing considerable damage. The adults can be collected in numbers traveling up and down on the limbs of infested trees in the bright sunlight.
P. violaceipenne Ham.—The type and cotype are from Jeannette May 16, and one specimen found at Jeannette May 30 (H. G. Klages). One specimen was taken at Charter Oak June 21, with two very faint ivory spots on each elytron.

Ropalopus Muls.

R. sanguinicollis Horn.—S. W. Penna. June and July (H. G. Klages); Heckton Mills June 21 (Fisher and Kirk); Hummelstown May 3.

Hylotrupes Serv.

H. bajulus L.—Pittsburgh May (H. G Klages); Philadelphia June 29 (G. M. Greene); State College June (E. M. Craighead); Harrisburg July 19; Hummelstown July 7.

(To Be Continued)

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